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EMERGENCY CHARACTER OF RAILWAY-SURGERY AND THE EXTENT OF LOCAL DISORGANIZATION RESULTING FROM INJURY.

BY DR. T. H. MANLEY.

Railway surgery is essentially of an emergency character; prompt and effective treatment immediately after injury here will largely influence ultimate results.

"First aid" treatment by laymen, is perhaps better than no aid at all, though we are strongly inclined to the opinion, after a large experience with this class of cases, that unskilled, inexperienced attendance here may work incalculable harm. In truth, there are many practitioners of large, general experience who are so dazed and horror-stricken at the sight of a mangled limb, that they are undecided as to just what course to pursue.

But, here comes the mechanic, or fellow-workman with his formidable tourniquet, his splints, bandages and chemical lotions, and "rushes in where angels fear to tread."

Every railroad properly provided for emergencies, possesses such a surgical equipment, that, in a very brief interval the injured may receive prompt, effective and professional attendance on the spot, or a near hospital, the physician may be wired and rushed to the spot by special conveyance, or the patient may be placed on a car and hurried to the nearest hospital station, where surgical aid will be in waiting.

That train crews should receive some rudimentary training in the handling of the maimed, all will concede, but this should embrace no more than is practiced by the stretcher company near a line of troops in action.

The extent of the disorganization of a limb damaged by a railway or other accidents will depend on the degree of force sustained, the age of the patient and the condition of the tissues.

In grave cases we will find two classes of cases.

1st. Those in which the degree of crushing force has been so great, as to leave a badly mangled limb, an extensive laceration of the soft parts and shattering of bone.

2nd. Those wherein superadded is damage to the large blood-trunks, and nerves, or in which the limb has been quite entirely detached, or hangs together only by the torn integuments, tendons or fascia.

By far the greater number of these cases is the result of railway accidents, the limb is struck obliquely by the advancing wheel, or crushed under its great weight.

A nude limb struck by a slowly moving wheel, carrying a great burden may be contused or lacerated, but if it does not engage between the smooth surfaces of the wheel and rail, it is pushed outward and escapes destruction. This may occur too, when the limb is clothed, but the danger of being drawn under is greater.

When a train is moving at a high rate of speed, the revolving motion of the wheel induces a decided centrifugal action, which tends to engage and fix under the wheels any loose, textile substance in the way. The grip on the clothing, however, often fails to securely hold the smooth bone-shaft, and hence, in these cases, we will find the garment at the point of impact torn to shreds and the bone fractured, but it is not shattered or pulverized. Several thus injured are in a very bad way; for while the osseous structures have escaped very serious damage, large areas of the skin and deep soft parts slough, the limb has sustained a crippling blow, its vitality for a time is greatly diminished, tissue resistance to septic influence is enfeebled, free suppuration and constitutional disturbance is quite certain to follow. So great was the fear of the latter and so disastrous its effects, that a great number of this class came promptly under the amputating knife. But, right here with these gruesome cases is where modern conservative surgery works its greatest triumphs; and unless there has been great loss of blood, or grave coincident internal injuries, recovery follows and the limb is spared.

In the second category of grave traumatisms, the vitality of the limb is totally destroyed; it becomes a foreign body; it has been *traumatically amputated.*

The signs of death are almost indubitable, the limb is asphyxiated, blanched, cold and without sensation.

The aspect of the mangled members will vary. In some we will find the parts torn widely open, the muscles ground to a pulp, the vessels and nerves are severed and the limb is held to the body only by shreds of tissues. Again deep parts are pulverized, yet, the integuments may remain intact, unbroken. No cases have ever come under my notice in railway injuries in which the severance of the limb from the body has been complete.

The class of grave crushes or lacerations of a limb which particularly call for the exercise of experience, knowledge and skill, are the intermediate between complete destruction and extensive mechanical disorganization. Here is where lack of discrimination or premature haste may lead to the terrible blunder, nay, a crime itself, by the needless sacrifice of limb, or any appendage of it.

A limb has been run over by a car, the osseous parts are shattered, the soft parts widely lacerated, or even the main blood-trunks severed. To the inexperienced these cases present many gruesome features. With a knowledge of the forces brought into operation and the harrowing aspect of the case, the unwary or inexperienced may see no way out except by an immediate amputation.

An instance was related to me some

years ago by Dr. L. E. Manley, of Canton, Pa., illustrating the importance of serious deliberation before we proceed to detach a limb preserving a vital relation with the body.

A young man of 22, while operating a circular saw, slipped and fell over on it. In an instant the axillary space was torn open, the saw tearing through the tendon of the pectoral, cleaving the humeral shaft in two, and dividing the brachial artery and vein with the brachial plexus. By intelligent assistance the hemorrhage was controlled.

On the arrival of surgical aid it was at first thought that only the deltoid muscle escaped and the vital tubular structures were divided, the arm must perish for a certainty, and amputation alone was called. But of the five physicians, one young practitioner stood out against amputation. The patient chose to abide by his decision. The divided brachial plexus was carefully sutured, the divided ends of the brachial artery and veins were ligated, the fragments of the shaft carefully apposed, the fleshy parts sutured, a drain left in and the arm adjusted. Recovery of the full use of the arm was secured, after less than six months time.

In every hospital with a large emergency service every surgeon sees cases of such a character that immediately after injury, that it is quite impossible to tell whether hopeless damage has been sustained or not; as time alone will answer this question. Surgery in many situations in recent times has over and over again demonstrated many current physiological fallacies.

In the surgery of the limbs, it has been shown that in both upper and lower extremities the main blood-trunks may be completely obturated mechanically by accident or disease without any marked impartment in the malnutrition of the limb resulting.

Again, multiple open fracture might seem to preclude the possibility of preservation or repair.

The limb has lost its natural warmth, pulsation in the peripheral arteries is absent, and the parts are numb.

In this intermediate class of crushes there are bad symptoms, when well defined which quite invariably point to complete loss of vitality; they are: 1st, the low temperature of the limb; when this lingers for more than 12 hours. Secondly , total loss of sensation, complete sensory paralysis.

Simple aseptic methods have become common property, efficient, primary hæmostosis is painless, simple and immediate. The doubtful cases we will embalm and wait for signs of impending decomposition or gangrene, before we amputate.

MACHINERY INJURIES.

It will be observed that since patent car couplers have come into use on railways, by far the greater number of serious injuries are borne by the lower extremity.

Since the enormous growth of our manufacturing industries and the very large substitution of machinery for nearly every conceivable description of manual labor, the number of injuries to the upper extremity has been greatly augmented.

The fingers are caught, lacerated, crushed or torn off; the fore arm, the

handle of the hand, may suffer various degrees of damage; the wrist, elbow or shoulder may sustain laceration, with or without fracture.

Although reparative activity is greater in the upper than the lower extremity, in grave injures, in consequence of the complexity of function the extent of usefulness recovered is much less.

One great advantage enjoyed in the treatment of serious arm or hand injuries, the patient is not necessarily long confined to bed; he can carry the limb about.

Looking back over twenty-five years, one is amazed at the advances in the treatment of traumatisms of the upper extremity. Then an open fracture of a finger, of the metacarpal bones or the bones of the fore arm or arm was often promptly treated by an immediate amputation; else, deep seated suppuration with infiltration, pyæmia or gangrene was very liable to supervene.

Now, unless the mangled part is totally destroyed, beyond any possible hope of resuscitation, we entertain no thought of an amputation.

SEVERE CRUSHES OF THE FINGERS OR HAND.

In a given injury of the toes of the foot it is not of much consequence whether we sever one or more joints; but with the fingers it is of the utmost importance that every possible particle of tissue be preserved that retains vitality; this is necessary not only to preserve the strength of the organ but also to diminish the deformity; for here, not as with the foot, the parts are exposed, and moreover any single finger or joint has its working value. Shattering of a digital phalanx seldom occurs, except with an open wound and so much serious damage to adjacent soft parts, as to induce subsequent destructive invasion or gangrene.

When this is obviated, the most gratifying results may be witnessed.

I have never met with an example of multiple open fracture of the metacarpal bones without utterly hopeless disorganization of the hand.

The wrist, fore-arm and elbow may be regarded as essential physiological constituents of the hand. The wrist action may be permanently destroyed by great violence with a useful limb remaining.

And, not only may pronation and supination be lost, but either the entire ulna or radical diaphysis may be lost with a highly useful limb remaining. This I have witnessed. One was a medical student, whose entire ulnar diaphysis was removed in early childhood, regeneration failing to restore any portion of it; the other was a young woman whose entire radial diaphysis had been removed for gummatous degeneration of left ulnar shaft .As a typewriter she continued her occupation without any serious detriment.

The loss of the hinge action at the elbow is a serious affair, but after subperiosteal resection of the elbow joint very good motion is frequently enjoyed. In any event, after an extensive shattering at the elbow when we realize that the articular surfaces are extensively destroyed, we may so flex the limb during the process of consolidation that the greatest measure of usefulness may be later enjoyed.

From the elbow to the shoulder or humero-scapula articulation, almost

nothing will justify an amputation, except along with the shattering of bone there is positive evidence that the blood vessels have suffered irreparable injury.

LIFE AND ITS PHYSICAL BASIS.*

BY AXEL E. GIBSON, M. D., LOS ANGELES, CAL.

"Through the tube of my microscope I am watching the development of a speck of protoplasm. Strange possibilities lie dormant in that semi-fluid globule. Let a moderate supply of warmth reached its watery cradle, and the plastic matter undergoes changes so rapid and yet so steady and purpose-like in their succession, that one can compare them to those operated by a skilled modeller upon a formless lump of clay. As with an invisible trowel the mass is divided into smaller and smaller portions, until it is reduced to an aggregation of granules —not too large to build withal the finest fabrics of the nascent organism. And then it is as if a delicate finger traced out the line to be occupied by the coming spinal column and moulded the contour of the body: pinching up the head at one end, the tail at the other,and fashioning flank and limb into due proportion in so artistic a way that after watching the process one is almost involuntarily possessed by the notion that some more subtle aid to vision than the chromatic would show the hidden artist, with his plan before him, striving with skillful manipulation to perfect his work."—THOMAS HUXLEY, "Lay Sermons."

It is to Professor Huxley we are indebted for the equally rhetorical and scientific term "Physical Basis of Life" applied to the primitive life-substance which, as early as 1846, by Hugo von Mahl, had been defined as *protoplasm,* from *protos* "first" and *plasma* "formed substance."

By protoplasm we understand that unorganized indeterminable, unit-essence from which the numberless forms of manifested existence draw their vitalizing fluid. In its gelatinous quivering mass, the powerful modern magnifying lens discloses a blurred, unsteady figure, the *recticulum,* in which lie imbedded a number of deeply staining granules—the *gemmules* of Darwin; *plastidules* of Hæckel; *physiological units* of Spencer,and *Microscomes* of our histological textbooks. Furthermore we find the centresome with its *centrosphere*—an impermanent body, which first appears at the moment of cell-division and is formed *de novo* in each process.

In the center of a limited mass of protoplasm floats the *nucleus,*a sharply defined zone, composed of a number of more or less hypothetical substances, among which phosphoric or nucleic acid exhibits a dominant action. Like the protoplasm *per se,* the nucleus presents a reticulum with its corresponding granules, the chromatins, and a sustaining net work—the *linin.* From the interaction between the protoplasmic elements and the nucleus springs the whole mass of numberless terrestrial existences.

Hence, as an active element, protoplasm is inseparable from the conception of cell and cell-division. The single cell has been defined as "a nucleated

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clump of protoplasm, with or without a limiting cell wall." Yet, under cover of this insignificant-looking "clump of protoplasm" undreamed of forces and possibilities are held in abeyance. In *mitosis,* or the process of cell-division, some hints are given as to the marvelous energies that lie concealed behind this screen of almost structureless substance. The nucleus constitutes the gateway through which the unmanifested rises into the manifested. The first attribute of the nucleus is manifested in its power of engendering the act of cell-division. Through a series of scene-shifting or *phases,* respectively *prophases, metaphases, anaphases* and *telaphases,* the cell with its nucleus undergoes a cycle of structural changes,subsequently appearing in the nucleus,centrosome,and cytoplasm. It is, however, in the centrosome—the minute granule situated in close proximity to the nucleus, that the first sign of proliferation is made visible. Its behavior reveals the presence of liberated electro-vital energies. *Mitosis* commences by a spontaneous division of the centrosome into two equal parts, each forming a temporary pole. Between these two polar bodies the intercellular substances are grouped into the figure of a spindle, which, during the entire process, is maintained in a state of rapid revolution.

During the entire mitosis an unceasing exchange of electro-vital energy seems to take place between the two poles, giving to them the appearance of radiating light; stimulated by the influence of this polar radiation, the nucleus swells, looses its consistency and gradually breaks up, while the fragments of its framework —the chromosomes are taken up by the whirling centrosomes or polar bodies,and subsequently polarized into two crown-like figures, which arrange themselves on opposite sides of the cell. The process of the mitosis then proceeds through a series of startling metamorphoses, which must be seen and studied in order to be appreciated; the two figures gradually condensing and fashioning themselves into perfect duplications of the original cell body.

The division and multiplication of the single cell leads to the formation of structural tissues. Gradually the ever-increasing number of cells, under the ensuing pressure of environment, are forced to evolve types and properties of specialization. The contents of the proliferating cell differentiates into three determinable layers, thereby inaugurating a stage of existence which, to-day, has its living representative in the *hydra* or fresh-water polyp. In this polyp we discover a type in which the single cell of *Amoeba proteus* has unfolded into a figure of a hollow tube. In this vegetative tube the outer covering, the *ectoderm,* forms the basis for sensation; the inner or under covering, the *endodern* foreshadows the tissues and viscera of assimilation, while the intramembranal layer, the *mesoderm*—formed between the inner and outer layers through the invagination of the tube, presents the substratum for the grand vascular and structural system of the future vertebrates. Thus from the inner layer springs the digestive tract with its surface of epithelial glands; from the middle grows the bones, blood, muscle, and connective

tissue; while from the outer emerges the skin, membranes, epidermal appendages, and the entire ramification of the nervous system.

The life-history of any organism is in its essential features the life-history of the single cell. The origin of species and the ascent of man can be plainly traced in the protoplasmic changes wrought in the unfoldment of the single cell. For the cell is the first organism in the series of organic evolution, the first figure impressed upon the plastic material of the elemental world. Its form and constitution vaguely, though unmistakably, foreshadows the portraiture of things to be." For evolution does not mean generation, nor much less creation, but rather the unfoldment, through formative processes, of powers and energies uncreated and indestructible, and already present in the single cell. The *Amoeba proteus* and *vorticella nebulifera,* the simplest forms of animal life yet described by the armed eye of science, possess in potentiality every function exhibited in their most accomplished descendants. The Amœba, while consisting of a single naked cell, is nevertheless a complete organism, possessing in its nucleus water-vacuoles, contractile vacuoles, food vacuoles and limiting membranes, the complete apparatus for the highest order of vegetative existence. Through this apparatus, the little creature is enabled to perform, rudimentarily, the whole range of physiological activities subsequently developed in the higher types of evolution. Exposed to the lynx-eye of the microscope, this little creature is seen to exhibit not only responses to external stimuli, but likewise feats of spontaneous, independent movement. Minute, tongue-like projections—*pseudopodia*—are extended from its surface to serve as means of locomotion. And as function is ever seen to precede structure, so the function of independent spontaneous movement must be regarded as an inherent power of protoplasm. Subjected to suitable environment, this function from latency, is brought into structural operation, followed by the subsequent evolution of organs of locomotion.

Again, if Amœba while moving across the slide of the microscope should encounter some food-yielding substance, the little organism at once surrounds the object and engulfs it in its fluidic mass. In a similar way the useless substances which once served as stimuli to the ingestive functions of the little entity are properly eliminated as excreta. In scientific parlance this attribute of the cell, of ingesting and assimilating nourishment, is known as metabolism, an attribute which must thus be conceded to have its genesis and potentiality in the undifferentiated protoplasm.

Now these three phases of the protoplasmic substance, the power to stir, or *mobility;* the power to transmit, or *conductivity;* and the power to assimilate or *metabolism,* constitute the triple-basis for the whole nervous mechanism, as it is by virtue of the sustained and harmonious co-operation of these three cell attributes that organized existence is made possible.

If for a moment we observe the career of the cell in that special phase

of its development—the nervous system—we cannot escape from noticing how closely the process of its proliferation is subjected to an ever-present purposive modification. The first modification of the multiplying cell-mass aims toward the formation of a cerebrospinal axis (the stages of growth being easily verifiable in the development of the embryo) manifested in the appearance of a longitudinal groove, whose lateral edges grow up toward a midline, in which they meet and fuse together. This process transforms the groove into a tube, which a subsequent enlargement of the upper end fashions into the future human cranium; while the remainder of the tube is modified into the magnificent spinal cord with its equilateral nerve-arborizations. Hence in the single cell the whole nervous system is held in abeyance, and like a photographer's negative is developed under the influence of external adjustments through environments.

Thus it is in the cell (being a representative of the protoplasmic essence) that we have to search for the source of the vital currents which move the mechanism of the organized world. The single cell is the sphinx which holds in its grasp the secrets of life and death. There is not a manifestation throughout the long sliding scale of organized existence, however complex and dazzling, which has not its genesis in and through the obscure life-processes of the single cell. From its mystic, imponderable depth, the forces of evolution well up their torrents of all-embracing, all-stirring energy. The cell brings us closer than any other physical manifestation, to the mighty, all-penetrating, life-force, which Proteus-like, forever disappearing and eternally reappearing, proceeds through the guise of marvelous metamorphosis to engender ever new wonders of growth and progress. With unceasing rhythm its invisible currents sweep through the cycle of change, registering the attributes of wisdom,beauty,and power in the forms and characters of the various kingdoms of nature—liberating, dissolving, and breaking down, again to remodel, reconstruct, and reorganize. Thus while the staging or framework of the protoplasmic or cellular stuctures are continually breaking down and eliminated from the field of action, the result remains and is visible in the crowning edifice of evolution, the temple of man "built without the sound of nail or hammer" sending its spires of attainments to ever higher evolutionary altitudes.

This intermittent activity of protoplasm in breaking down and building up structures, constitutes the two poles or aspects of organized life. In the language of physiologic technique, the evolutionary process consists of the breaking down of a structure or its *katabolism*, its reconstruction, or *anabolism*, and the totality of the two processes, or *metabolism*.

A series of changes are wrung out from these dual forms of evolution. The resulting action may be diagrammed in the figure of two opposing stairs converging in a summit, of which the one side represents the *ascending*, the other the *descending* currents of protoplasmic energy, while the summit indicates the vital chemical field of action where the amor-

phous and unorganized life-stuff becomes changed into form and structure.

On these emblematical stairs the carriers of life climb up and down. Along the ascending—the anabolic—grade, rolls up the cargo of ingested and assimilated vegetative material, which after having become deposited in the formative and constructing vortex of the cell, again departs downward—the opposite—the descending of katabolic grade, freighted with the *debris* of the metabolic exchange; while finally the resulting sum-total of the process is manifested in the marvelous fabric of organized structures.

The ascending grade on this ladder of metabolic action is marked by a series of forms and substances contantly increasing in complexity as they rise toward the figurative summit, while the descending grade presents a corresponding simplification of the ensuing katabolic bodies sinking in the scale of physiologic and nutritive value from *nuclein, nucleic acid, phosphoric acid,* down the chain of the more and more devitalized *alloxuric* bodies until finally at the end of the ladder, the katabolic changes terminate in the waste products *uric acid* and *urea*—the latter being the nearest approach to physiological ashes to be found in the output of the animal-human furnace.

As the food stream passes up the physiological ascent, forcing its way through the specific vesicular membranes under the guiding influence of the selective affinity of the cells, the trophically changed molecules explode into a series of protoplasmic deposits, through which the nutritive elements become dialyzed into tissue-building energy.

The factor which regulates the dialyzing membranes in their selective affinity is contained in the principle of molecular vibration, *i. e.*, in the property of *numbers.* All electro-vital action proceeds through a series of ganglionic shocks or discharges, and their number expresses the vital intensity and functional power of the cells. The ascent of life means an increased capacity of the unit—whether considered as single cell or as individual—to respond with its molecular constituency to an over-increased ratio of vibration. This relation between number and functional power has been demonstrated as actively present in every phase of organic unfoldment, functional or structural.

The whole range of world-dynamics may be said to be contained in the single cell, or its protoplasmic substratum. For the latter is not limited to organic existence—being likewise found to form a basis to the inorganic world. On the strength of recent researches, Professor von Schron of Leipsic maintains that the barriers between the organic and inorganic kingdoms will have to be removed if an intelligible study of nature is to be made possible. His experiments have proven beyond doubt that crystals possess vital powers. He has found them capable of exhibiting the vital phenomena of "(1) individual motion; (2) structural evolution of the substance in which the crystals are constituted; (3) characteristic movements in the shape of generating and promoting vibratory waves." To

this may be added that Professor Crookes as early as 1868 exhibited glycerin crystals to the members of the chemical society in London. Though the learned lecturer failed to explain the principle at work in the singular process—it being a mystery to himself—the phenomenon yet makes evident the reality of a basic identity of all substances. Or, to quote from Mr. Crookes himself: "All the endless diversities of being are bound together by a physical as well as an ideal unity . . . a unity of power or structure, as well as unity of elemental composition."

Truly Huxley enunciated a great truth in his famous definition of protoplasm. Being the "physical basis of life," protoplasm constitutes a unit at once of structure and function. The cellular form imposed upon its homogeneous mass adds in reality nothing to its generative powers. The cell constitutes the first ascent from the protoplasmic level toward organized existence. In the cell the protoplasmic dynamo receives its first rudimentary vehicle by which to start its series of world-fashioning changes. All the cellular elements (mechanical or chemical) are more or less of hypothetical character; and it has been experimentally demonstrated that the centrosome, centrosphere, chromosome, polar bodies and the various temporary figures, appearing and disappearing in the course of cell-life, are apparently accessories and form no essential element in the process of cell-division. They serve as mere conductors or pathways in the course of externalization of the one indivisible power welling up from the protoplasmic deeps into the world of manifestation. In his recent remarkable experiments on sea-urchins, in which is shown the power of the egg to undergo the primary stages of parthenogetic development as the result of artificial chemical stimulus, Professor Loeb has rendered this character of the cell evident. He considers that fertilization itself is an "ionic" act and "the nucleus of the male cell inessential to the process as merely serving as an adjunct-stimulus in the adjustment of the proportions of the surrounding ions." By saline preparations, this daring explorer in the "dark continent" of biology, displaces with triumphant success the various structures of the cell in the process of artificial fertilization.

Never before, in all recorded history, did physical science so boldly and so successfully advance toward the solution of the great world-problem of *life*. But the great problem lies perhaps deeper than the purely *physical* science can reach. For protoplasm with all its mystery, with all its exhaustless resources of energy, is still the mere *physical basis* of life—while life itself lies infinitely deeper. To chemically dissect protoplasm and search for its veiled source of power, is certainly of great physiological value; but does it, after all, bring us really nearer an understanding of life itself? Would an examination of Beethoven's violin or piano, even if submitted to the analysis of dissection, initiate us into the mystery of musical composition, or lay bare to us the anatomy of his Ninth Symphony? And

what is the "physical basis of life" but an instrument—infinitely intricate and subtle, it is true—but yet an instrument, through which vibrates, both chemically and mechanically, the unanalyzable and indefinible power of the immortal breath of life?

Hence we cannot believe that the definition of life as a mere output of nucleic and saline solution is to be considered final. While we readily grant that these elements, in furnishing suitable arrangement for the physical manifestations of life, must be regarded as indispensable factors, yet they are *conditions* merely, not *causes*. They constitute *life's* first immediate environment. For what is natural evolution but the demonstration of the progress wrought by an individualized vital principle in the substance of physical environment. So far from the environments being the *cause* of evolution, on the contrary, they constitute its limiting *vis restantia*. In protoplasm Life encounters its first environment, followed by the infinite variety of others, ranging from the single cell through subsequent cell divisions up to ever higher and more complex forms of organized existence. Evolution may thus be called the fountain of life, inasmuch as it reveals, through its organic output, the scope and character of the forces at work in its vital current. And as the force, active in a fountain, by overcoming the resistance and friction of opposing environments, flings its liquid masses into cascades of towering height, is not caused by nor inherent in, the water itself, but in the influence of the surrounding atmospheric pressure, so likewise back of the protoplasmic stream—a veritable fountain of life—moves the silent, invisible substanceless essence of life itself, lifting the whole sliding-scale of elemental and organic structures up to ever higher altitudes of evolutionary fitness.

Now the immediate purpose of evolution is to demonstrate the qualities and powers latent in life. Every leaf or flower is a living, irrefutable demonstration in the vegetable kingdom, of the *beauty* of life; every rock or boulder demonstrates in the mineral kingdom demonstrates on that plane creature of the animal and human kingdom demonstates on that plane the *intelligence* and *wisdom* of life. Existence is a school, and every form or object—animate or inanimate—constitutes an infinite equation,and an equation which sooner or later must be solved. And the solution, within the reach of all, lies in an earnest, unselfish application of one's entire nature to the phenomena and vicissitudes of life, gauged by love, and prompted by will and reason. For each problem solved in outer nature, the student will at once find a corresponding problem solved in his own personal nature, as man in himself is an epitome, not only of the past, but also of the future.

The result of such application manifests in the formation of *character* and *individuality*. And this seems to be the purpose—conscious or unconscious—which, like a guiding Ariadne-thread, leads the individual through the labyrinths of natural evolution.

"Yet I doubt not through the ages
one's increasing purpose runs,

And the thoughts of men are widened
by the process of the suns."

Perhaps, after all, the old statement of the mystic Carpenter of Galilee, that "he who lives the life shall know the doctrine" is not without its scientific value.

METHEMOGLOBINEMIA DUE TO ACETANILID, BUT WITHOUT ANY MARKED CONSTITUTIONAL SYMPTOMS.*

BY RICHARD C. CABOT, M. D., OF BOSTON, MASS.

Patrick B. Lafleur, a mill operator, entered the Out-Patient Department of the Massachusetts General Hospital, July 8, 1902, in a condition of intense cyanosis. The following history was elicited: Thirty-five years old. In December, 1901, he began to have pain and numbness in the right side of the head. The numbness preceded the headache. At the same time that the numbness began (in December, 1901), painful swellings arose behind the angle of each jaw and throbbing in the whole right side of the head. These swellings, which turned out to be glands, were removed two months ago. The hearing is somewhat affected on the painful side, and there has been nasal obstruction on the right from the first. Occasionally he has shooting pains in the throat. When sleeping, saliva always runs from his mouth. Six months ago he began taking acetanilid for his pain, and since then he has taken on the average 6 5-grain powders a day. A month ago marked blueness of the face and hands was noticed and has persisted ever since. Except for pain he feels reasonably well, although he is easily tired, somewhat constipated and mentally dull. His appetite is good, and he has been at work till two months ago, but since November, 1901, he thinks he has lost 50 pounds. Previous to this sickness he has had no illnes, and he denies venereal disease. No excess of alcohol. He drinks about six cups of tea a day. Family history good. Mother died of child-birth at the age of 42.

Physical Examination. The patient's skin is of a yellowish livid hue, extraordinarily like that of a cadaver with some post mortem discoloration. The lips, tongue, mucous membranes and nails show marked slaty-blue cyanosis. This is more striking in the finger nails than in the toe nails. The patient is well nourished, indeed rather fat. There is no dyspnea nor evidence of any discomfort. The glands on the right side of the neck are somewhat enlarged. Elsewhere no enlargement can be made out. Behind each ear is a scar about an inch long, due to the removal of glands. The pupils react normally, and the fundus oculi is normal; tongue is clean, the heart, lungs and abdomen entirely negative. The pulses are synchronous, but the left is distinctly larger than the right. The knee jerks are very lively.

Blood. Soaked into filter paper, the blood was not red at all, but chocolate or mahogany colored. The drop as it stood upon the ear was a still darker brown. The count showed: Red corpuscles, 5,200,000; white corpuscles, 16,000; hemoglobin could not

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be tested. Differential count showed: Polymorphonuclears, 92 per cent.; lymphocytes, 8 per cent.; eosinophiles absent. In specimens stained by Wright's method there was granular stippling of a good many of the red cells, and slight poikilocytosis, but no other abnormality was observed. Spectroscopical examination by Dr. Hewes, confirmed by Dr. Pfaff, shows the characteristic spectrum for the methemoglobin.

The *urine* was brownish-red in color and showed the methemoglobin spectrum. A large bottle was sent to Dr. E. S. Wood for examination and found to contain no hematoporphyrin.

Examination of the nose by Dr. Payson Clark showed a large polyp hanging from the middle turbinate. This was removed and found by Dr. J. H. Wright to show the typical structure of a mucous polyp with no evidence of a malignant disease.

July 21, 1902. The patient entered the hospital ten days ago in Ward 7, and has had pretty severe pain continually until the past 24 hours Dr. Clark has removed several more polypi, and the patient states to-day that he is beginning to feel distinctly more comfortable. The cyanosis continues unchanged.

The following blood examinations were recorded in the hospital: July 11, 1902; red cells, 6, 096, 000; leukocytes, 27,800; coagulation time, 3.5 minutes. No iodophilia. Blood plates normal. Differential count (400 leukocytes) showed: Polymorphonuclears, 83.5 per cent.; lymphocytes, 15. per cent.; eosinophiles, .75 per cent.; mast cells, .75 per cent. Many leukocytes showed abnormal fragility and other signs of degeneration. July 23, leukocytes, 21,500; July 27, leukocytes, 22,100; July 30, leukocytes, 17,000; August 1, leukocytes, 24,000; August 5, leukocytes, 29,500; August 8, leukocytes, 20,400. The patient had fever ranging from 99 degrees to 100 degrees during the first week's stay in the hospital. He lost five pounds between July 11 and July 18. August 18. The urine averaged about 30 ounces in 24 hours and contained a faint trace of albumin with a few hyaline and brown granular casts. The patient was given ice, ammonal, cannabis indica, ergotin, phenol sodique, potassium iodide, quinine, paraldehyde, lactophenin, belladonna and other drugs in the hope of relieving his pain, but morphine alone was effective, and at the time of his discharge he needed a grain a day. August 8. Another specimen removed from the nose to-day and examined by Dr. Oscar Richardson showed the characteristic structure of carcinoma. On hearing the diagnosis the patient left the hospital.

September 12. A letter from his brother says that he is in a hospital in Montreal in about the same condition.

The most striking point in this case was the good general condition of the patient. Despite the intense cyanosis and the easily demonstrable methemoglobinemia, he felt and seemed practically well during the intervals of freedom from pain. His headache tortured him, but the methemoglobinemia gave him no inconvenience whatsoever. There was no

disturbance of respiration, circulation or any other symptom, if we except the slight evidences of renal irritation which were present from time to time.

TRIKRESOL IN PARA-URETHRAL ABSCESS.

BY M. L. HEIDINGSFELD, PH. B., M. D.,

CINCINNATI. PROF. OF DERMATOLOGY, LAURA MEMORIAL COLLEGE; CLINICAL LECTURER ON DERMATOLOGY AND VENEREAL DISEASES, MIAMI MEDICAL COLLEGE; DERMATOLOGIST TO PRESBYTERIAN HOSPITAL.

Many cases of chronic gonorrhea owe their obstinate character and protracted course to the presence of prostatitis, vesiculitis or cowperitis. But a much larger class owe it to a different and frequently overlooked condition—an extension of the gonorrheal infection into the numerous small glands which extensively line the anterior urethra and glans penis and the external and internal surfaces of the prepuce. Their inflammatory and infectious contents are exuded in the form of a molded filament or shred, and often persist long after an urethritis has subsided and the urine has become clear, producing urine loaded with infectious shreds. Careful palpation will reveal their presence as minute indurations. These so called para-urethral abscesses often become greatly inflamed and considerably enlarged, varying in size from a pea to a pigeon's egg.

The promptness with which these abscesses refilled when freely incised and drained, and their obstinacy, reminded Dr. Heidingsfeld of the large indurated obstinate abscesses which often complicate severe cases of pusculär acne, and incited him to try the method which he is successfully using in the latter affection, viz., hypodermic injections of minute quantities of trikresol into the heart of the abscess. He has used the preparation in all forms of furuncules and localized abscesses, a single injection often completely aborting them in 24 to 48 hours. Its use was then extended to large abscesses and carbuncles with equally gratifying results, and in one instance he believes he aborted an incipient facial erysipelas by injecting it into its emanating point, a small abscess at the outer angle of the eye.

An ordinary 15-minim glass syringe, which is provided with a retaining screw is filled with Trikresol and armed with a 26-gauge needle; the air is expressed, and the retaining screw run down until the fraction of a minim can be carefully measured by adjusting the retaining screw. The proper dose, a drop the size of a bead sufficing for the smallest abscess and a minim or more for the larger ones, is then injected into the center of the abscess.

Prof. Heidingsfeld recounts four cases, of which the following history is typical:

H. S., age 27, had several gonorrheal infections during preceding five years. In June 1901 several abscesses formed along the anterior border of urethra immediately behind the sulcus coronarius; extirpation was per-

Read before the North Kentucky Medical Society, Nov. 15, 1902; abstracted from the *Boston Medical and Surgical Journal*, April 16, 1903.

formed, but a mild urethritis persisted and became quite active after several months and was again complicated by abscess formation. October 28, 1901, patient had very active urethritis and two circumscribed abscesses, each about the size of a marble, directly under the line of operative incision. Abscesses were incised and freely drained; but gonorrheal urethritis failed to disappear completely. Abscesses again formed, and were excised and drained on December 22. Improvement was only temporary,and when abscesses appeared a third time, February 17, 1902, they were injected with Trikresol. Since then abscesses and urethritis have not re-appeared.

In all of the four cases Trikresol not only effected a complete cure of the abscesses, but materially cut short what were exceedingly obstinate, refractory and unduly prolonged urethritis. Though four cases scarcely afford sufficient experience to determine the full efficiency of the preparation, yet in connection with the marked success which attends its use in analogous conditions, pustular acne and furunculosis, its ease of administration, the absence of any marked distress or serious complication, thoroughly suffices to warrant its use in every accessible case.

Prof. Heidingsfeld also used Trikresol in an anomalous and obstinate vulvo-vaginal abscess, with equally gratifying results:

November 8, Miss I. S. presented herself with a vulvo-vaginal abscess, of the left labium, of the size of a pigeon's egg, tender and sensitive to pressure, accompanied with considerable redness and swelling of the adjacent area. The abscess was incised and a considerable quantity of pus escaped, whose microscopic examination revealed ill-defined, poorly-staining, degenerated pus cells, with an abundance of deeply stained characteristic looking intra and extra-cellular gonoccoci. Trikresol injected into center of abscess and ice bag applied for twenty-four hours. November 11 patient reported she had experienced scarcely any pain or discomfort from operation, and that swelling and distress had entirely disappeared. On November 15 the labium had assumed a perfectly normal appearance, and patient was discharged as cured.

EUPHTHALMIN AS A MYDRIATIC FOR THE GENERAL PRACTITIONER.

BY DR. ALBERT B. HALE, CHICAGO.

The use of the ophthalmoscope, said Dr. Hale, is becoming more general in medical diagnosis. He pointed out the need of a drug to dilate the pupil, not only to study the condition of the fundus, but also to note the condition of the cornea, iris and lens. Atropin was too powerful and destroyed accommodation. Homatropin was only of less strength and was expensive. Cocain was good, but dangerous to the eye. Euphthalmin scarcely affected accommodation; it dilated the pupil fully and in a short time. It had no dangerous element about it and its effects quickly pass away. He detailed experiments.

Read at the Illinois State Medical Society, Apr. 29 to May 2, 1903: Abstracted in the *Journal of the Amer. Med. Asso.*, May 9, 1903.

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ORIGINAL ARTICLES of practical utility and length are invited from the profession. Accepted manuscripts will be paid for by a year's subscription to this journal and one hundred extra copies of the issue in which such appears if desired.

Editorial.

PROGRESSIVE ADVANCES OF THE RECENT PAST AS IT RELATES TO THE IMPROVEMENT IN SURGICAL TECHNIQUE.

The century which has just drawn to a close, in many respects was certainly the most notable in history.

The burdens of the human family have been lightened, life for the masses has been made more tolerable and easier. The spread of the democratic spirit has nerved and inspired all with fresh incentives; and, with the extinguishment of despotisms the way has been opened for a new dawn.

Progress has made stupendous strides in all the arts, sciences and industries; this being on the largest scale and at the greatest pace, in those countries which enjoy the greatest share of popular government, and every man is the architect of his own fortune.

The span of human life has been greatly extended; science, now having stamped out many epidemics, or limited their spread. The arts and the inventive genius of man have changed the whole face of nature and utilized her latent forces, thereby setting aside forever the human muscle in many of those toilsome occupations, where only strong hands for toilsome effort were needed.

Although advances have been great in all the departments of the world's affairs, in none has it been greater than in the healing art, and in preventive medicine.

Modern sanitation and hygiene would certainly have been impossible, without their handmaids, the modern inventions, the marvelous revolution effected in the manufacturies, construction, travel, transportation, etc.; along with which we cannot close our eyes to the salutary influence of popular, wide-spread education.

Ignorance has had to give way to a higher intelligence; learning is no longer the monopoly of the favored few; civilized communities hear no more of death from hunger, or of multitudes tortured by the pangs of famine fever. Popular, constitutional governments now compel an improved sanitation, wholesome habitations, proper food and clothing; and more, the State now steps in between the employer and his servants; it limits the working hours, safe-guards his health, and protects his body against violence.

In estimating the remarkable achievements of modern surgery it is a great mistake to discount the enor-

mous influence all of the foregoing have had in making these possible.

Anæsthetics and antiseptics have truly been inestimable blessings, but as salutary factors in operative surgery they would have counted for little, on half-starved, over-worked, badly-clothed, miserably-housed, scurvy subjects.

Therefore, why in our time, much more is expected of us, as practitioners, because the general condition of our patients for surgical operations is better, the environment is vastly improved, and our resources are practically unlimited.

The growth of medical knowledge during the past quarter of the 19th century, has been so great, and the expanse of progress so wide, that specialization in study and practice has become imperative. As advances in the surgical art have been the greatest, here the subdivision has been on the largest scale, and in consequence of the segregation in labor, contemporaneous medical literature has had to adapt itself to the new demand of the student and practitioner. In consequence of this altered condition of things, every year the number of works dealing with special subjects is steadily increasing; and yet, with this large annual increment of the medical press, there is still a need widely felt for more works to deal at greater length with various topics and subjects, which at present, are in English medical literature, but inadequately considered.

This is most obvious, in the surgical-therapy of the traumatisms of the skeleton of the bones and joints, especially in those cases attended with more or less disorganization of the solid parts.

But now that science has let in more light on the subject, and art has so revolutionized surgical technique, hope has displaced despair, and we daily witness results that in the near past, would have been regarded as bordering on the marvelous.

In no part of the domain of surgical lesions is this more accentuated than in mechanical disorganization of bone.

In our country with its vast mileage of railroads, extensive mining, commercial and manufacturing interests, the number of crushed and mangled limbs is annually very great, and hence, any attempt to improve our former methods of treatment of them, however unpretentious or crude it may be, should be eagerly accepted by the profession. T. H. M.

OSTEOPLASTY AND THE SURGICAL EXPEDIENTS RESORTED TO IN THE MECHANICAL DISORGANIZATION OF BONES, THE DEFORMITIES, OR IMPEDIMENTS IN FUNCTION FOLLOWING THEIR REPAIR.

Osteoplastic Surgery as practiced in our time, constitutes a new branch of the healing art; rendered possible and practicable through many far-reaching changes in the environment of progressive and prosperous people; through the suppression of wound infection, the employment of anæsthetics, the greater facilities at our command in the care of the injured, through experimental and clinical research, with a larger acquaintance with the regenerative processes of the economy.

Its sphere of usefulness applies

equally to the domain of mechanical and pathological osseous lesions, but it has a wide application and achieves the most brilliant results in the former.

Its greatest scope is in complicated fractures, and in cases formerly demanding amputation.

The term "osteoplasty" rigidly defined, signifies plastic procedures on the skeleton, transplantation, re-implantation and grafting; but, in order to include the subject of not only ossific repairs, but the correction of deformities, the term must be so expanded to embrace osteo-section, osteotomy, osteoclasis, etc.

The same causes which have led to the stupendous progress in the surgery of the organs and the soft parts have opened the way to a salutary revolution in the treatment of bones that have been disorganized by force.

The late Dr. Ollier, who may be regarded as the father of modern osteoplastic procedures, unreservedly gives the credit to Lord Lister, of having laid the foundation stone, when he established the doctrine of antisepsis.

Healthy bone substance is intolerant of strong chemical solutions, and time has proved that steriiized water is more efficient. To Lister, nevertheless, we are forever indebted for his emphasizing the importance of clean operating and excluding foreign substances from healthy wounds.

Animal experimentation, vivisection, certainly ranks second in importance among the modern aids in advancing the study of this subject.

The dash and audacity of the rising generation of surgeons, the aggressive advance into untrodden fields, the disregard of doctrinal teaching of the past, with a critical analysis of the pathological features presented in various bone formations have also contributed very largely to place the modern therapy of traumatism on an enduring basis.

All of the foregoing, however, would avail but little without the greatest of all boons ever conferred on suffering humanity, pulmonary anæsthesia; by which we plainlessly raise the sensative bone structures into view, and with leisure and security, proceed with our operative technique.

Osteoplasty may be utilized, as a *primary*, or a *secondary* measure in both fractures and amputations, according to circumstances and the condition of the patient; its great forte being to spare, to repair, and to restore.

While it aims chiefly to deal with the bones and the articulations, its conservative influence in liberating the nerve trunks, neuralgias and paretic or palsied parts after mal-union, or hyperostosis, cannot be over-estimated.

In no surgical work in the English language has this phase of osseous surgery been yet systematically considered: and the brief references to it in the most of our contemporaneous treatises are wholly inadequate for one to comprehensively appreciate the subject, or intelligently apply its principles in appropriate cases. T. H. M.

According to Dr. Finsen, 412 out of 804 cases of lupus treated were cured by the Finsen ultra-violet ray. The results in Boston are even more successful.

SALTS OF ARSENIC AND IRON IN THERAPEUTICS.

BY DR. RAYMOND.

The association of martial and arsenical medication is not new in therapeutics. Devergy in 1847, Duchesne Dupare in 1854, and later on Gubler advocate the use of arseniate of iron in the treatment of certain dermatoses.

The arsenico-ferruginous medication received the attention of the Academy of Medicine in 1880 apropos of a soluble preparation of arseniate of iron experimented with at the Hotel Dieu.

It is particularly in the treatment of anemia and chloro-anemia that the various combinations of iron and arsenic have been used by physicians all over the world. Unfortunately these preparations have often been the cause of disappointment because they do not all possess the same value.

In fact, arsenate of iron contains 38 per cent. of arsenic and 28 per cent. of iron. Such a compound when given at a daily dose of from three to twenty-five milligrams does not play the double part of martial and arsenical agent as expected. In fact when we administer arseniate of iron, the therapeutical dose of arsenic is exceeded when the dose of iron is reached. Arseniate of iron therefore may be considered as an arsenical agent, but its value as a martial preparation is nil.

The simultaneous administration of martial and arsenical preparations always induces gastric intolerance.

For this reason, Fowler's solution, even administered in small doses with a ferrous salt always disturbs the digestive organs.

Arseniate of soda and a ferruginous water (Bussang or Orezza for instance), according to Gubler's method, produce in a short time gastric troubles, constipation and congestive phenomena toward the head.

For a long time practitioners have been in the habit of prescribing a mixture of Fowler's solution and tincture of Mars, equal parts, in progressive doses (4 to 20 drops daily.) The objection that can be made in regard to this mixture is that it contains the tincture of Mars which is the prototype of unreliable preparations. The therapeutists were so well aware of this fact that they have suggested instead the tartrate of iron and potassium.

Even in this shape this medication is not endorsed by the majority. We must also refrain from administering Fowler's or Pearson's solution in combination with a tartarized tincture of Mars, or with the ferro-potassic tartrate (Liegeois.) This combination would not be tolerated by the stomach; hence the necessity of interrupting the treatment.

The use of cacodylic acid in therapeutics induced the pharmacologists and the clinicians to resort to cacodylate of iron.

Cacodylic acid combines with iron in various proportions. The most interesting of these combinations are the ferric cacodylate and the ferrus cacodylate.

Ferric Cacodylate.—When we cause the reaction by heat of a solution of cacodylic acid on the hydrate of oxid of iron recently precipitated from the

perchloride, the hydrate is dissolved giving a reddish-brown liquor from which may be isolated through evaporation the ferric cacodylate. This salt has the appearance of an amorphous powder, dissolves in water giving a brown liquor which gives all the reactions of iron to the maximum. Arsenic appears in it as in cacodylic acid.

But the ferric cacodylates of commerce are very far from the theoretical composition answering to the desired formula. Some of them contain too small a quantity of iron, they are acid and are easily dissolved in cold water. Others which on the contrary are very little soluble and do not produce a clear solution, contain too much iron and may be considered as mixtures of ferric cacodylate and oxid of iron. Such oxid of iron, although sometimes soluble, is but feebly combined, precipitates easily and becomes inactive, and the influence of a foreign salt is sufficient to break this very mutable molecular preparation.

If we notice that the molecular weight of cacodylic acid is of 138 and that of iron 56, we see that to administer 0 gramme 056 iron in the shape of ferric cacodylate we have to give to the patient at the same time 0 gramme 414 of cacodylic acid; this dose is entirely too large considering the posology now admitted and it results from this that the ferric cacodylate is above everything an arsenical, the iron which it contains existing only in too small a quantity so oxidizable that it injures its therapeutical activity. In fact we know that the ferrous salts should be preferably used in therapeutics.

Ferrous Cacodylate.—This salt, the preparation and preservation of which are very difficult, represents the union of two molecules of cacodylic acid with one molecule of iron.

It is a green powder soluble in cold water. This solution is eminently oxidizable and is rapidly transformed into ferric salt. In the cold state it produces a brown coloration due to mixtures of basic cacodylates and normal cacodylate.

In the hot state the decomposition is more intense; there is a formation of ferric cacodylic and a precipitate of oxid of iron.

In the Ferrous Cacodylate the two elements do not yet exist in therapeutical proportions, 56 parts of iron correspond to 276 parts of cacodylic acid.

En resume, being given that in the union of the two medicinal principles we try to establish between the weights of the components a relation of therapeutical doses, we may assert that the two cacodylates of iron which we have studied do not answer to this indication.

In opposition to these unequal compositions we have just experimented with a new product, well defined, unalterable, containing iron to the minimum of oxidation combined with cacodylic acid in such proportions that 56 milligrams of iron correspond to 0 gramme 13 of cacodylic acid. This product prepared in the laboratory of Clin and to which its authors have given the name of Marsyle, is a yellowish-green powder soluble in water which it colors pale green.

This solution may be kept a long time without oxidation; it is not affected by moisture, as is often the case with the solution of cacodylate of

soda; and it never has the odor of garlic.

The toxicity of Marsyle has been studied on animals; it is nil.

Rabbits to whom Marsyle Clin has been administered either hypodermically, or in the stomach in massive doses (1 centigram to 50 centigrams daily) kept in good health.

The urinary secretion particularly remained normal and there was an increase in weight.

On the adult in good health the medicine has been administered per os at an average dose of 10 centigrams daily.

The medicine was always well tolerated, the normal appetite increased and, as a most important fact, the garlicly odor was always very much less than with corresponding doses of cacodylate of soda administered to the same persons.

Marsyle may be given in pill form or in solution. It may also be administered hypodermically. But on account of phenomena of reaction which may occur in certain patients, it is preferable to conform with the two following rules:

1st. Use the hypodermic method only when there is gastric intolerance. These cases are very uncommon, because we know that Marsyle is well tolerated and that it does not produce in the organism the secondary cacodylic compounds.

2nd. Ascertain the susceptibility of the patient with a trial dose of 1-2 cubic centimeter, giving the injections at intervals sufficiently long to determine the degree of tolerance.

The average dose of Marsyle is 10 centigrams daily for adults. The medicine is taken at meal times. The dose corresponds to four Marsyle Clin globules, or 20 drops of Marsyle Clin.

The drops may be given also in enema (20 drops in 30 or 40 grammes of tepid water.)

Hypodermically we give from 1-2 to one cubic centimeter daily.

It is necessary to clean the needle of the syringe carefully after giving the injection, to avoid the oxidations which would result from the contact of the needle with the atmosphere.

Later on we may discuss again this important question of the cacodyloferruginous medications.—*Revue Critique de Medicine et de Chirurgie.*

CLINICAL OBSERVATIONS AND REPORTS OF CASES ON GLYCO-THYMOLINE.

BY H. S. P. LARE, M. D., ST. LOUIS, MO.

The value of Glyco-Thymoline to the clinician to-day has been recognized by the profession since its introduction a few years ago. As a purgative for the various mucous membrane of the body, Glyco-Thymoline fills a long felt want in the physician's armamentarium of tried and deserving therapeutic agents, being safe and sufficient, its action is definite and positive.

Glyco-Thymoline, acting as it does on the theory of exosmosis, is the rational, logical theory of health, depleting inflammatory engorgements by this process, increasing capillary circulation and maintaining strict aseptic cleanliness of the mucous membranes of the body whenever applied. The conception or creation of Glyco-Thymoline, I consider a scientific achieve-

ment, as when it is liberally diluted with distilled water, possesses the saline strength and alkalinity similar to that of the human blood, therein lying the great secret of success of this most potent remedial agent, for it is a well established fact to every physician that any topical application to be beneficial and successful, must harmonize with the natural fluids of the tissues to be treated.

In this respect Glyco-Thymoline stands pre-eminently in the foremost ranks of therapeutic resources at the physician's command, readily dissolving accumulated mucus,detaching mucus crusts and necrosed tissue.

Having satisfied myself beyond the shadow of a doubt, that Glyco-Thymoline as prepared by Kress & Owen Co., of New York City, is by far the most efficient purgative for the mucous membranes extant, I append herewith to my clinical observations, reports of cases as they occur in my daily ledger.

Case I. Mrs. Etta L.., aet 28, married, mother of three children, complained of dizziness, backache and pains in thighs, a constant offensive leucorrhea.

Examination revealed an enlarged uterus with great tenderness of the cervix. I diagnosed the case as one of endocervioitis.

After prescribing a purgative and tonic course of treatment, I treated her locally with Glyco-Thymoline two parts, and water one part.

Applied cotton tampon or pledgets thoroughly saturated with Glyco-Thymoline mixture.

I pursued this treatment three times per week, instructing patient to use warm water vaginal douche after withdrawing tampon at the end of forty-eight hours,the douche being medicated with about one-half ounce of Glyco-Thymoline to every pint of warm water used. In ten weeks time I had the satisfaction of seeing my patient fully restored to health.

Case II. Mrs. Lulu W.., widow, aet 40, mother of two children, ever since birth of her last child has been troubled with menstrual irregularities. Had constant "whites" as she expressed it. Upon examination I found a slight retroflexion and oozing from the cervical os. I corrected the retroflexion by the application of a pessary and applied locally Glyco-Thymoline, thoroughly saturating pledgets of cotton with the same. Gave constitutional treatment in the nature of iron and mineral acids, and was rewarded by seeing her make a speedy recovery in about six weeks time.

Case III. Mrs. Flora M.., aet 36, married, mother of one child, a boy, consulted me professionally about an itching of the vulvæ, menses were very slight and burning as they passed from her every month.

Examination revealed an aggravated case of pruritus. Placed her under treatment by giving a wash of Glyco-Thymoline (Kress), Glycerine and Rose Water, equal parts. In three weeks the pruritus had disappeared.

It begins to look as if Dr. Wiley, who has been experimenting with the effects of borax and boracic acid upon the human stomacr will not be able after all to prove that a preservative in meats or other foods is poisonous. It all depends upon the stomach.

INVESTIGATIONS OF ANTISTREPTOCOCCUS SERUM.

BY DRS. F. MEYER AND L. NICHAELIS.

Dr. Meyer first presented a short historic review of the various antistreptococcus sera (Marmorek's, Tavel's, Menzer's, Moser's and Aronson's), and then touched briefly on the mooted point if there is but one or several varieties of the streptococcus.

His clinical trials were made with Aronson's serum, with which he treated in Leyden's Clinic 18 cases of erysipelas, scarlet fever, angina and sepsis. In a number of these cases, however, treatment was only begun when the infection was very far advanced; others were treated with insufficient doses; and of the rest a a marked degree. Harmful effects were never observed.

The serum should not only be used in desperate cases; and it should not be employed with expectations of such results as are demanded of diphtheria antitoxin; for diphtheria is only a local infection.

The results from the harmless Aronson serum were very encouraging. Animal experiments made by the essayist show that Marmorek's serum possessed absolutely no immunizing power, and that Tavel's in very large and Aronson's in very small doses immunize with certainty. Further investigations proved that Marmorek's and Tavel's sera failed to have any influence on infections, while Aronson's serum in the majority of cases exerts a curative action. The same should be injected as early as possible, when a smaller dosage can be employed.

Menzer's serum was totally inefficacious, and of all artificial sera Aronson's was the only effective one. Experimentally, the serum of two human beings who had passed through a streptococcus infection exhibited the same immunizing power.

The protective action of the antistreptococcus serum was also evident by its effect on the hæmolysis due to the streptococci and on the commencing fever. The co-operation of the living organism is required for the development of its immunizing power, as the germs flourish very well in the serum itself.

Aronson's serum should be used for prophylactic purposes as well as for the treatment of streptococcus infections, though one need not go as far as the gynecologist in Paris who since eight years treats every puerperal case with streptococcic antitoxin.

Contraindications are exudates of the serous membrane which, as animal experiments demonstrated, may be increased by the serum.

Dr. L. Michaelis then reported in detail in regard to the processes which took place in the animal bodies after serum injections.

Read at the Verein fur Innere Medizin, Berlin March 16, 1903; translated from the *Muenchener Medizinische Wochenschrift*, March 24, 1903

In a "Report of Thirty Cases of Pulmonary Tuberculosis, with Remarks on Classification and Treatment Employed," Dr. Karl von Ruck says:

THE TREATMENT OF PNEUMONIA.

All the cases reported were treated with large doses of creosote carbonate,

while at the same time hot poultices of flaxseed were applied. From the additional experience afforded by these cases, as well as of several others seen in consultation, I am greatly pleased with my results. In addition to the fact that the pneumonic area did not break down, as is so commonly experienced in the forms due to mixed infection to which all my cases belonged, the creosotal seemed to have an unmistakable influence on the fever, especially when large doses were given. —Abstracted from *The Journal of Tuberculosis*, April, 1903.

SEVERE REFLEX PAIN.

J. H. Tilden, M. D., of Denver, in the June number of the *Chicago Medical Times*, in an article advocating the use of tampons in gynæcological practice, reports, among others, a case which was characterized by severe reflex symptoms and which had not yielded to the treatment accorded by two other practitioners. Dr. Tilden's procedure was, the introduction of a glycerine tampon and the administration of antikamnia in ten grain doses (two five-grain tablets) to relieve the pain. The tampon was removed each night at bedtime and followed with hot water injections. The patient on being discharged, remarked, that since following this treatment she could run the sewing machine without the usual pain and tired feeling.

A man 30 years old, blind from birth, had an operation performed for cataact in Glasgow. The first time he saw yellow, he felt sick; the first sight of red gave him pleasure.

NEW REQUIREMENTS FOR STATE MEDICAL LICENSES.

After July 4th, 1903, the following changes in the requirements for a New Jersey license will go into effect:

1. The date of examination will be the third Tuesday and Wednesday in June and October.

2. The academic requirements will be a certificate or diploma, issued after four years of study, either in a normal, manual training or high school of the first grade, in this State, or in a legally constituted academy, seminary or institute of equal grade, or a student's certificate of examination for admission to the freshmen class of a reputable literary college or an academic education considered and accepted by the State Superintendent of Public Instruction as fully equivalent.

3. The medical requirements will be four full school years of medical study, of at least nine months each, including four satisfactory courses of lectures of at least seven months each, in four different calendar years, in a legally incorporated medical college or colleges, prior to receiving the degree of Doctor of Medicine.

Candidates for examination or for the endorsement of a license issued by a recognized Examining Board of another State, will be obliged, after July 4th, 1903, to comply with the new standard of requirements for a New Jersey license.

E. L. B. Godfrey, M. D.
Secretary.

Camden, N. J.

No doctor can afford to be indifferent in the filling of his prescription.

EXPERIMENTAL GASTRITIS; EARLY PATHOLOGIC CHANGES.

Dr. Fenton B. Turck, of Chicago, says:

Clinical and pathologic observations of gastritis are usually unsatisfactory, because (1) cases of acute gastritis are not frequently found in the autopsy room; (2) post mortem changes are so early produced, due to autodigestion as well as autolysis of the mucosa; (3) even where the stomach is washed out immediately after death, and alcohol introduced into it, as suggested by Ewald, there may be ante mortem changes in the gastric mucosa, such as may occur by autodigestion or autolysis during the agonal period; (4) the finding of exfoliated pieces of mucous membrane in the wash water is of decided advantage, if we could determine positively the length of time the loosened or partly detached material had remained in the stomach, and usually the exfoliated pieces are found in chronic conditions and not in the acute stages.

There are a few points that may be of interest to note in the progress of these series of experiments.

1. The early appearance of an exudate on the surface of the mucosa composed of cells, granular debris and fibrillar masses, leucocytes and red cells, within one and two hours after the introduction of the mustard emulsion.

2. Later, the debris of cells become more ill defined, and form a more homogeneous mass.

3. The marked chemotactic effect of the mustard shown in the early specimens.

4. The surface epithelium not destroyed in proportion to the marked changes occurring deeper in the mucosa.

5. The early appearance of necrosed acid or parietal cells, which become granular and lose their nucleus. Some cells found free in the duct, which have the appearance of degenerated acid or parietal cells.

6. Karyokinetic figures make their appearance within six hours, and are very active even deep in the body and fundus of the tubules.

7. Cyst of the glands in the twenty-four hours' specimen, with accumulation of leucocytes and degenerated epithelial cells.

8. It is important to note that the exudate that forms on the surface at first is not a good soil for the development of microorganisms, but as the exudate becomes changed in character and appearance, bacteria early develop in the coating on the surface. This the writer has previously called attention to, and the further experimental work on this point of the bacteriology of the stomach will be reported later.

9. The chemotactic and other effects of mustard, evidently due to its peculiar toxic properties, open up an interesting point of what anti-bodies may be found. This is now being investigated by giving animals small doses of mustard to observe the degree of immunity that is induced.

Dr. Chas. J. Aldrich (Am. Med.) questions whether migraine is ever cured by puttig on spectacles. He regards the affection as an incurable neurosis. Some of us have seen cases get well, just the same.

FURTHER INVESTIGATIONS CONCERNING STREPTOCOCCI.

BY DR. HANS ARONSON.

Former experiments led the author to the conclusion that there are no specific differences between the streptococci found in various infections, such as erysipelas, scarlet fever, articular rheumatism and sepsis. All streptococci may cause joint and heart affections in horses. The serum of a horse immunized with a certain variety of streptococci protects against and agglutinates in the same manner all streptococci.

In his more recent experiments Aronson employed twenty different varieties of the streptococcus. They were administered to horses without previous animal passages, and their agglutinative powers were tested and compared with the immunizing serum and that obtained from other streptococci. The agglutination must be macroscopically visible to be convincing. The experiments showed that horse serum markedly agglutinates only the material with which it has been treated; it does so little or not at all with other streptococci, even when they come from the same human disease. Agglutination is therefore an individual reaction. The specific nature of the scarlatina streptococcus cannot be demonstrated; mice, rabbits and dogs proved that it is impracticable to prepare a serum from streptococcus cultures directly derived from human beings. He therefore adds to his serum, which is equally directed against all streptococci and is obtained by treating a horse with highly virulent streptococci, a fluid produced by immunization with streptococci taken directly from human subjects. Exact measurement of the latter has not yet been possible. A uniform action can only be secured by mixing the sera of different horses and by the use of numerous races.

In discussing this paper, Prof. A. Baginsky stated he had used Aronson's serum in 56 further cases of scarlet fever since his report to the Berlin Medical Society. The epidemic was a very severe one, for many of the other cases admitted at the same time into the hospital had bad sequellæ (glandular abscesses, hæmorrhagic nephritis, etc.) He had gotten the distinct impression that many cases which were severe in the beginning ran their course without complications by reason of the influence of the serum. The Aronson serum is at all events entirely innocuous in suitable cases; it fully deserves a trial in doses of 20 to 50 cc.

Read at the Society for Internal Medicine, Berlin, March 23, 1903; abstracted from the *Munchener Med. Wochenschrift*, April 7, 1903.

INTRAVENOUS COLLARGOLUM INJECTIONS IN SEPTIC AFFECTIONS.

BY DR. HERMANN SCHMIDT OF THE SURGICAL DIVISION OF THE CITY HOSPITAL AT DRESDEN-JOHANNSTADT.

Intravenous injection of Collargolum should be employed instead of Unguentum Crede when cutaneous anæmia does not permit the absorption of the ointment or when a prompt and energetic action is necessary, or

Read at the Society of Naturalists and Physicians, Dresden, Jan. 24, 1903; Abstracted from the *Deutsche Med. Wochenschrift*, Apr 1 9th and 16, 03.

when inunction is too painful to patient. The innocuousness and efficacy of Collargolum has been convincingly demonstrated. In the new form now supplied many of the disadvantages of the older product are absent. It is readily soluble in distilled water up to 1:20. Solutions can be kept at all seasons without special protection from light and heat and are less sensitive to chemical action. Two to five per cent. solutions should be injected with an ordinary hypodermic syringe, and as the silver is rapidly excreted, severe cases require a repetition in 12 or 24 hours. No ill effects need be feared, no matter how frequently injections are given.

The technique is extremely simple. The median vein of the arm is usually employed; in most cases it is easy to reach this vessel, or a vein of the back of the hand, or a crural or dorsal vein. The sterilized needle is introduced while the constricted vein is turgid; the appearance of a few drops of blood shows that it is within the vessel. When precaution is taken to aspirate a little blood into the syringe, which is not completely filled, and the limb is elevated, any air bubble that may be present rises to the top. A very slow injection is then made; and a plaster and, if necessary, a bandage is then placed over the puncture. When anæmia, cachexia or obesity prevent the reaching of the vein through the skin, despite the fact that the limb has been permitted to hang pendant for some time after having been bandaged, the vein must be laid bare on its axis. The small cut is sutured after injection has been made.

Turning now to the clinical consideration of the Collargolum injection, the author states that temperature and pulse give but a very incomplete picture of the diseases in many cases. In septic affections the state of the nervous system, appetite and especially the general condition are criteria of almost greater importance. The effect of the Collargolum injection was generally seen sooner and more plainly in the betterment of the general condition than in any other way. The injections have no unpleasant effects; the chills that were formerly noted do not occur with the new preparation.

The action of the medicament is apparent in four or six hours. In uncomplicated and milder cases a decrease in the nervous symptoms, such as restlessness, headache and dullnesc takes place; the patient becomes bright, and appetite and sleep return. A mild sweat and usually a movement of the bowels occur. Either with this general improvement, which is often astonishing, or a few hours later occurs a fall in temperature and pulse. The patient may go on to recovery after a single injection.

In more serious cases improvement is but temporary; as the silver is excreted, the symptoms reappear and the injections must be repeated. When primary abscess formation has occurred, a plain and permanent, the less marked improvement in the general condition is usually also evident, but pulse and temperature remain as they were or are remittently high, until the pus is evacuated. When, however, the case has progressed to a pyæmia

with multiple metastatic abscesses,the prognosis is unfavorable. We cannot expect to influence collections lying outside the blood and lymph streams, even though in rare cases they may become encapsulated and rendered harmless either with or without help of general disinfection.

That moribund patients and those whose hearts and vasomotors are about exhausted cannot be saved, is not strange; antitoxin is useless in similar conditions of diphtheria. All cases which are still curable convalesce very quickly after the sepsis is mastered, whereas cases that are not cut short are accompanied by slow recovery and liability to relapses.

In the original essay twenty-four successfully treated cases were presented; they include septic forms of osteomyelitis, peritonitis, polyarthritis, erythema nodosum, phlegmonous erysipelas, septicæmia, etc.

Dr. Schmidt recommends a trial of Collargolum in septic affections, as the simplicity of the technique and the entire absence of risk remove all possible objections to this procedure.

Dr. Reidhaar recounted before the Basel Medical Society (May 1902) a case of puerperal sepsis which is of practical interest in various aspects, but more especially because streptococcus serum and Collargolum were successively employed. The temperature curve demonstrated the uselessness of the one and the preeminent value of the other remedy.

Delivery was made December 15th with great loss of blood; after-pains extremely violent. Two days after childbirth there were chills and the temperature rose to 104 degrees F. Pulse varied between 130 and 140, being fluttering. Perineal laceration showed no sign of exudate. General sepsis was diagnosed; the same was developed from an endometritis, of which the only sign was the foul smelling discharge.

December 18th consultation with Prof. Goenner, who advised two subcutaneous injections of antistreptococcus serum and vaginal irrigation. In the night there was chill lasting two hours. Temperature 105.4, pulse 130 to 160.

The next day a third injection of serum was given and three infusions of digitalis administered. Patient vomited all food and was nourished artificially. Chill lasting two and one-half bours. Evening temperature 104.4.

December 20, morning temperature 103.1. Patient was extremely delirious during afternoon. 5 p. m. consultation with Prof von Herff. At his advice two and one-half drams of a one per cent. Collargolum solution were injected into the cephalic vein of the left arm and a camphor injection was given every three hours. One-thirtieth grain strychnine substituted for digitalis. Alcohol withdrawn; only milk administered. That very night food better borne and vomiting stopped. Chill at midnight, but it only lasted one-half hour.

December 21, morning temperature 98.6, evening 101.8. Patient quiet; delirium has passed. Retained three pints of milk during the day very well. Received an intravenous Collargolum and two strychnine injections. Was

given five drams of elixir frangulæ during night.

December 22. Day passed without disturbances. Spontaneous defecation. Another Collargolum and a strychnine injection.

December 23. Bacteriologic examination of blood revealed streptococci. Collargolum injected.

December 24. As temperature was relatively low, no Collargolum.

December 25th. Sudden rise to 103.6. Collargolum forenoon and afternoon.

December 26th. Slight remission in the morning. Temperature 101.7. Two Collargolum injections. Evening temperature 103.1. Pulse 135.

December 27th. High temperature persists. A Collargolum injection in the morning and an inunction of Unguentum Crede in the evening.

December 28th. Towards midday slight temperature fall. Collargolum. Bacteriologic examination showed blood permanently sterile.

No more injections were given until January 6th, when there was a chill followed by a temperature rise to 105. Another Collargolum injection was given then and for the next four days. 1 1-4 drams of Unguentum Crede were inuncted daily. The temperature soon returned to normal.

The rapid onset of this severe streptococcus infection was probably due to the great loss of blood. The interesting point is the fact that both methods which are at present prominently before the profession were employed. After three applications of the streptococcus serum the condition of the patient got considerably worse. On the other hand, the improvement and the subsequent benign course of the disease must be attributed in part, if not entirely, to Collargolum. Its action was prompt, as is shown by its favorable effect on the fever and the chills, the cessation of the delirium and the improvement in the digestion and general condition. When the injections were discontinued immediately after improvement had taken place, the temperature again rose on the following day; and it is evident that at that time blood disinfection had not been entirely accomplished and that the Collargolum introduced into the circulation had only been able to temporarily inhibit the growth of the streptococci.—Abstracted from the *Monatsschr. f. Geburtsh and Gynaek.*, Vol. 16, No. 4.

SURGICAL INFECTIONS AND COLLARGOLUM.

BY DR. PAUL COUDRAY.

Dr. Coudray relates three surgical cases and reviews the action of Collargolum thereon. The first was a grave systemic infection in a girl of 10, due to an acute osteomyelitis of the entire femur. There was an enormous swelling of the left thigh with dilatation of the superficial vessels and intense pain. Diagnosis was concurred in by Prof. Comby. Collargolum was administered daily, and the temperature curve demonstrates the promptness of its action. This staphylococcus infection ran an entirely favorable course under the treatment.

Read before the Paris Pediatric Society, Jan. 20 1903; abstracted from *Bulletins de la Societe de Pediatric de Paris*, January, 1903.

The second case was an appendicitis with suppurative infiltration of the right loin and subhepatic region. Treatment was strictly medical with daily Collargolum inunctions resulting in complete apyrexia.

The last case is a very curious one, being originally a post-puerperal septicemia and afterwards an influenza. Delivery took place on January 1st. On the 6th, severe septicemia. Temperature 103.3 degrees F., pulse 116, agitation, fetid lochia, tender uterus. Treatment: lavage with 1:200 permanganate of potash, intrauterine curettage, application of half strength tincture of iodine. On the 7th, temperature 100 degrees F., in the afternoon 102 degrees F. Inunction of 45 grains Unguentum Crede, temperature falling to 99.3 degrees F. within an hour. Complete apyrexia took place on the 10th. On the 11th symptoms of influenza; temperature 103.6. Collargolum. Fall next day to 102 degrees F. Collargolum. Fall on the 13th and 14th to 97.7 degrees F. and apyrexia afterwards. In this case the rapid action of the Collargolum was as evident in the post-puerperal infection as it was in the influenza.

Dr. Coudray wants to be well understood that he draws no definite conclusions from so small a number of cases. But the remedy has given interesting and important results, and it should certainly be employed.

In a report on "The Uses of Suprarenal Extract in Nose and Throat Diseases," Beaman Douglass, M. D., Professor of Diseases of the Nose and Throat, Post-graduate Medical College, New York, states:

"The formula I prefer (for saeptum operations) is as follows:

R. Cocain hydrochloride ..5 gr.
Sodium chloride .....10 gr.
Beta-Eucain .....5 gr.
Dried suprarenal gland 30 gr.
Water .....1 oz.

"In making this combination, the suprarenal is mixed with the water, the Eucain and salt are added after filtration, and last of all, just before using, the necessary quantity of cocain is added. This makes a one per cent. solution of the cocain and Eucain, which may be freely used in the mucous membrane without fear of poisoning. Ordinarily, six minims of this solution may be injected without any bad results."—Abstracted from the *New York Medical Journal*, May 2, 1903.

In an article entitled "Difficult Thyroid Operations Under Local Anesthesia," Prof. Riedel of Jena gives the details of the Eucain method that he employs. The patient gets a subcutaneous morphine injection, the neck is disinfected, the head is wrapped in a sterile cloth, and the mouth and nose covered with a double layer of aseptic gauze. A small superficial incision is made through the skin above the manubrium. Then the infiltration is made with the freshly boiled and filtered 1:1000 normal saline solution of Eucain. Riedel lays stress upon the importance of filtering the solution through several layers of gauze, to get rid of the flocculi that may otherwise be present. The syringe should hold 50 cubic centimeters (2 oz.) or more, and the needle should be introduced into the subcutaneous

and not into the cutaneous tissue. The entire subcutaneous tissue should be filled with the solution, until the parts are entirely white and tense. As much as 500 grams (16 ozs.) of the Eucain solution is required to infiltrate the entire territory in large goitres. The needle must be repeatedly introduced and the fluid injected until the entire anterior and lateral portion of the neck up to the ears on both sides to the supraclavicular fossa and manubrium sterni below is tensely filled with the fluid. The patient does not feel the extensive skin incision at all.—Abstracted from the *Berliner Klinische Wochenschrift,* March 16, 1903.

INFECTIOUS BRONCHOPNEUMONIA

D. W. Wynkoop, New York, briefly reports six cases of an infectious form of bronchopneumonia, five occurring in children and one in an adult. The period of incubation is about twelve days. In all the cases there was an absence of coryza at the outset and only in adults was the severe pain in the back spoken of. In most cases the disease gained its first apparent foothold in the larynx, and no local treatment nor the administration of quinin would alter its course. Proper treatment of the disease calls for the same care and local measures as would be used in an ordinary bronchopneumonia. Quinin seems to do little good, except as a stimulant. In children an afternoon temperature can be looked for for six weeks after the lungs have been cleared up and the cough has ceased. This temperature does not affect the general health, and the children during this period will even gain the weight they have lost during the illness. They show no evidence whatever of being ill, and the fact is ascertained only if the temperature is taken at the right time. Unlike ordinary influenza, no mental depression follows. The prognosis is good, except when the case has been neglected and is in want of proper treatment.

THE TREATMENT OF INSANE IN PRIVATE PRACTICE.

Dr. P. Savary Pearce, of Philadelphia, concludes:

For all of us the lesson of acute insanities should be modified and retaught, and the earliest possible treatment instituted, looking toward the cure of the acutely insane in private, long before there is any occasion to think of asylum treatment, valuable as that is in chronic insanity, and for the homicidal maniacs and melancholics.

Acute insanities of hybrid types, *i. e.*, those that savor of two or more types, are the most hopeful in prognosis, and are therefore the ones to be kept out of asylums to the last moment. Especially where hysteria enters as an element in the case, the patient should be kept out of an asylum.

The physicians' duty is to overcome the terror felt by lay folk for the insane,and to engender that hopelessness of treatment of such cases in private which is so common in general medical affections.

No doctor can afford to be indidiffer ent in the filling of his prescription.

UTERO-VAGINAL CATARRH.

BY H. S. REESER, M. D., READING, PA.

In Glyco-Thymoline the practitioner has a preparation of great value. It is non-toxic and unirritating, distinctly alterative, antiphlogistic, deodorant and antiseptic. On tampons in utero-vaginal catarrhal conditions it is superior to Ichthyol, Glycerite of Tannin, Iodine, etc., and also possesses the advantage of being much cleaner.

During the past year I have used it on many cases with uniformly good results. I cite two in which Glyco-Thymoline was particularly satisfactory.

Case I. Mrs. P... She had suffered from prolapsus uteri following confinement. The vagina became flabby and a cystitis was set up by pressure on the bladder. She was obliged to get out of bed ten to twelve times during the night to urinate. She was also suffering from a nervous reflex and had been confined to bed for about six months previous to her coming under my care.

She had been treated by a number who had ignored the cause and had merely treated the symptoms, daily washings of the bladder,etc., which had magnified the condition in the patient's eyes and increased her nervous condition. After assuring the patient that she would recover, I began treatment as follows:

Tamponed with lamb's wool saturated with pure Glyco-Thymoline, three times a week. Kept this up for five weeks when my patient was completely cured, able to be about and enjoy life, much to the delight of her husband and friends.

Case II. Young married woman, Endometritis Utero-Vaginal Catarrh, very offensive in character. Irritated with Glyco-Thymoline and introduced tampons saturated with pure Glyco-Thymoline which soon effected a radical cure.

No physician can afford to be indifferent in the filling of his prescriptions.

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